

Wiki design for teacher interventions in collaborative production

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Abstract: In this poster we report on a process of re-designing a wiki. From previous research we have found that while this type of software is conducive to collective knowledge advancement, it needs to be further developed. Socially we develop a teacher mode where the teacher can trace and directly support learners' activities. Technologically we develop prompts, reminders and guides for subject specific development. We aim to contribute to developing CSCL related classroom practices by developing the XWiki application for such purposes.

Aims

In this poster we describe an ongoing redesign of a wiki. A wiki can be described as a collective, networked resource where in principle, anyone can contribute, revise, and delete and where contributors' changes are immediately accessible on the web. It rests on principles of mutuality and transparency. Contributors do not need to learn complicated mark-up or programming languages. From previous research (Lund, 2006; Lund, forthcoming; Lund & Smørdal, 2006) we have found that while this type of software is conducive to collective knowledge advancement, it needs to be developed in order to afford more support for CSCL practices. Thus, our aim is to re-design a particular wiki (Xwiki) with such supporting features.

We argue that this type of software holds genuine collaborative potential. This potential is partly found in the wiki's architecture; partly in the activities it affords. We present wiki design principles that balance learner exploration with more collaborative and goal directed efforts.

Several studies focusing on learning and ICT show that specific elements in the software are conducive to learning, mainly categories, technological "prompts" or "reminders" (Scardemalia & Bereiter, 1996; Future Learning Environments, 2006). For example, an application can remind the user about vital categories in a school subject. At the same time, we see that teachers struggle to participate in learner activities that are enacted offline as well as online. Often, teachers resort to working offline, leaving the online activities to learners alone.

Wiki activities seem to shift the epistemological position of its users from private ownership of information entities to collectively produced networks of information (Lund, 2006; Lund & Smørdal, 2006). However, not only studies of wiki environments have informed this design. The re-design can also be described as a further development of previous CSCL design efforts where categories, prompts and reminders have been vital. Findings from studies of these environments in schools emphasize that we need to develop more advanced learning resources as part of the institutional development of schools (Wasson and Ludvigsen, 2003). It is the aim of the present design effort to support conceptualization of specific phenomena in a knowledge domain (Ludvigsen & Mørch, 2003). The overall goal is to bring the knowledge domain more to the front in collaborative applications. The purpose of the activities and the connection between different activities have often been left implicit (Rasmussen, 2005). Consequently, the students are left to author much of the task as part of their collaborative work. These findings have informed the current stage of the design process.

Methodology

Our design reflects an ongoing, longitudinal intervention study at a Norwegian Upper Secondary School. It rests on principles of design-based research where interventions are iterative, theory-informed and aim to capture the ecology of the learning situation. Thus, we see the development of wiki design as intimately connected with the activities in which the wiki is appropriated, with the types of tasks it lends itself to, the types of assessment that can be developed and learners' access to social and material resources.

We draw on previous analyses on classroom interactions and discourse and with a particular view to the relationships between verbal and non-verbal, object-oriented activity. Together with log files and questionnaire

responses from participants we accumulate a thick description of classroom use of wikis that inform our design work.

We have chosen the XWiki <www.xwiki.org/> to implement new designs. XWiki is chosen due to its rich feature set and its basis of open source middleware and many powerful programming interfaces. The XWiki affords a shared production resource dedicated to a school class jointly developing content over time.

Our design builds on ‘Knowledge forum’ and the first and second generation of ‘Future Learning Environments’ where prompts and categories inscribed in the leaning environments provide teachers and students with tools to think and to scaffold their collaborative efforts (Scardemalia & Bereiter 1996; Wasson and Ludvigsen, 2003; Ludvigsen and Mørch, 2003).

Implications for educational design

As for learner and teacher activities in wikis, there are so far few studies. The ones we have conducted show that teachers only to little extent see a place for themselves in a wiki. Thus, we have found that careful analysis and development of technological prompts and meta level features needs to be aligned with a perspective of both teacher and student participation. Design interventions that are only directed toward scaffolding student production seem not to be sufficient (Rasmussen et.al. 2003). Thus, in our design both teachers’ and students’ production are a direct concern. We suggest the following design features:

We develop the relationship between automated prompts and the teacher/learner participation by means of meta-level functions in the wiki. One example of automated prompts in wikis is the different text mark-up colors to indicate the direction of the work in progress. Colors may denote argument, counter-argument, example, questioning, conclusion etc.

- We develop teacher support for teacher monitoring and participating in student activity in order to initiate and sustain the work also in the online setting. We develop “activity maps” to trace who is working with what, what collaboration patterns emerge, what is the status of the collective object, how are the texts structured etc.
- Teachers may want to directly engage in the student activity by providing questions, comments, directions, critique etc. This requires that the XWiki affords a teacher’s space or mode that is flexible and easily accessible.
- Learners have spaces for individual creation of content to show the relationship between individual and collective content production.

The wiki challenges our notions of ownership and individual approaches to knowledge construction and this has implications for theoretical understandings as well as for educational design.

Theoretically we aim to contribute to an understanding of collective knowledge advancement and how this involves new CSCL practices emerging amidst the historical and institutional ones. The epistemological shift from individual to collective production can be seen as an example of sociogenesis; how we come to understanding through social interaction mediated by cultural tools.

As for educational design we see the need to prepare teachers and learners for collective knowledge advancement. To the best of our knowledge, teacher education (at least in Norway) does not address collective approaches in a principled and theory-informed manner. Consequently we see a great need to develop CSCL related classroom practices and didactics that embrace individual as well as collective and networked knowledge construction.

Our perspective can be crystallized in efforts to co-develop technology and learning practices conducive to collective knowledge advancement.

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